

L 2738-66

ACCESSION NR: AP5024334

with the polarization in *pa*-scattering. These polarization values must be verified by direct measurement. Orig. art. has: 2 figures, 1 table.

ASSOCIATION: none

SUBMITTED: 23Mar65

ENCL: 00

SUB CODE: NP

NO REF SOV: 004

OTHER: 010

*mlr*  
Card 2/2

L 1842-66 EWT(m)/EPF(c)/EWP(t)/EWP(b)/EWA(h) -- IJP(c) JD  
ACCESSION Nr: AT5022291 UR/3136/65/000/834/0001/0011

AUTHOR: Arifkhanov, U. R.; Vlasov, N. A.; Davydov, V. V.; Samoylov, L. N.

TITLE: Polarization in n-alpha at E sub n=25, 28, and 34 MEV

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-834, 1965. Polarizatsiya v n-alpha rasseyanii pri E<sub>n</sub>=25, 28 i 34 Mev, 1-11

TOPIC TAGS: neutron polarization, neutron scattering, helium, proton, nuclear reaction

ABSTRACT: Polarization neutrons with energies of 25, 28, and 34 MEV were obtained in the reaction  $T(d,n)He^4$  at an angle of  $30^\circ$ . Measurements of the asymmetry of scattering of these neutrons by helium were made at various angles ranging from  $45$  to  $150^\circ$ . The results obtained are compared with the angular dependence of the polarization in p- $\alpha$  scattering, interpolated to the same proton energies on the basis of data for other energies (22, 29, and 40 MEV). A satisfactory agreement is found between the angular dependence of the asymmetry of n- $\alpha$  and p- $\alpha$  scattering. On the basis of the agreement with polarization in p- $\alpha$  scattering, a preliminary evaluation of polarization in n- $\alpha$  scattering is given. Orig. art. has: 2 figures and 1 table.

Card 1/2

L 1842-66

ACCESSION NR: AT5022291

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NO REF SOV: 003

OTHER: C10

*dg*  
Card 2/2

ARIFKHANOVA, M

USSR/Geophysics. General Division - Text, Reference, and Popular Scientific Literature, L-6

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 36021

Author: Arifkhanova, M.

Institution: None

Title: On the Russian-Uzbek Dictionary of Meteorological Terms

Original

Periodical: In book: Meteorol. i gidrol. v Uzbekistane, Tashkent, AN UzSSR, 1955, 89-90

Abstract: Exposition of the principles of compiling a Russian-Uzbek dictionary on geophysics, containing approximately 1,500 words. The terms are divided into 4 groups: (1) words and terms, long existing in the Uzbek language and equivalent to the corresponding Russian ones (570); (2) words having no direct equivalents, but readily translatable (190); (3) words newly-introduced into the Uzbek language, retaining their transcription (thermometer, front, etc) (230); (4) words newly-introduced into the Uzbek language, with change of transcription ("Synoptic map," "Beaufort scale," etc) (120).

Card 1/1

ARIFKHANOVA, M.A.

Wind regime at high altitudes over Central Asia during South  
Caspian cyclones. Trudy Sred.-Az. nauch.-issl. gidrometeor.  
inst. no.4:99-109 '61. (MIRA 15:1)  
(Soviet Central Asia--Winds)

ARIFKHANOVA, M.K.

Ephemerals of the Fergana Valley. Nauch. trudy TashGU no.241.  
Biol. nauki no.44:122-128 '64.

Type of psammophilous brush vegetation of the Fergana Valley.  
Ibid.:133-137 (MIRA 18:7)

ARIFKHANOVA, M.M.

Flood plain vegetation of the Fergana Valley. Trudy TashGU  
no.187:77-80 '61. (MIRA 15:3)

1. Tashkentskiy gosudarstvennyy universitet imeni V.I.Lenina.  
(Fergana--Botany)

ARIFKHANOVA, N.A., assistant; MAKHMUDOVA, M.M., assistant.

Experience in the use of the vacuum extractor. Med. zh. Uzbek.  
3:18-22 '63 (MIRA 17:2)

1. Iz kafedry akusherstva i ginekologii ( zav. - doktor med. nauk  
N.T. Rayevskaya) Tashkentskogo gosudarstvennogo instituta usov-  
ershenstvovaniy vrachey,



ARIFKHODZHAYEV, S.A.; RAIMBEKOV, Z.

Using electronic digital computers in construction management.  
Izv. AN Uz. SSR. Ser. tekhn. nauk 9 no.6:14-18 '65 (MIRA 19:1)

1. Institut mekhaniki i Vychislitel'nyy tsentr AN UzSSR. Submitted June 23, 1965.

ARIFKHODZHAYEV, S.A.

Designing plates with symmetrical holes used in high-speed  
electronic calculating machines. Izv. AN Uz.SSR. Ser. tekhn.  
nauk no. 3:53-59 '58. (MIRA 11:8)

1. Institut matematiki i mekhaniki im. V.I.Romanovskogo AN UzSSR.  
(Electronic calculating machines)

ARIFKHODZHAYEV, S. A.: Master Tech Sci (diss) -- "The computation of the plane stressed state of a rectangular sheet with apertures". Tashkent, 1959. 19 pp (Acad Sci Uzbek SSR, Dept of Tech and Geol-Chem Sci, Inst of Structures), 200 copies (KL, No 13, 1959, 104)

ARIFKHODZHAYEV, S.A.

Investigation of the plane stressed state of a rectangular plate  
with an opening by the optical method. Izv. AN Uz. SSR, Ser. tekhn.  
nauk no. 2:57-67 '59. (MIRA 12:7)

1. Institut matematiki im. V.I. Romanovskogo AN UzSSR.  
(Elastic plates and shells)

ARIFKHODZHAYEV, Saydamin Abrarovich, kand. tekhn.nauk, starshiy  
nauchnyy sotr.; KABULOV, V.K., otv. red.; KISELEVA, V.N.,  
red.; GOR'KOVAYA, Z.P., tekhn. red.

[Tables for calculating rectangular plates with rectangular  
holes]Tablitsy dlia rascheta priamougol'nykh plastinok s  
priamougol'nyim otverstiem. Tashkent, Izd-vo Akad. nauk  
Uzbekskoi SSR, 1962. 131 p. (MIRA 15:9)

1. Vychislitel'nyy tsentr Instituta matematiki im. V.I.  
Romanovskogo Akademii nauk Uzbekskoy SSR (for Arifkhodzhayev).
2. Chlen-korrespondent Akademii nauk Uzbekskoy SSR (for  
Kabulov).

(Elastic plates and shells—Tables, calcula-  
tions, etc.)

ARIFKHODZHAYEV, S.A.; KARIMOV, Sh.S.

Using electronic digital computers in determining the frequencies and shapes of natural vibrations of frames with concentrated masses. Izv. AN Uz. SSR. Ser. tekhn. nauk 8 no.3:36-42 '64. (MIRA 17:11)

1. Institut mekhaniki s vychislitel'nym tsentrom AN UzSSR.

KOCHANOVSKIY, N.Ya., kand.tekhn.nauk, red.; GROMYKO, L.G., red.;  
YEGOROVA, I.A., red.; THERENT'YEV, Yu.Ya., red.; TOLUB'YEVA,  
Ye.P., red.; ARIFMETCHIKOV, F.V., red.; RODIONOV, Yu.I., red.;  
BALASHOV, V.I., tekhn.red.; BURLAKOVA, O.Z., tekhn.red.

[Welding equipment; annotated catalog] Svarochnoe oborudovanie; katalog-spravochnik. Moskva, TSentr.in-t nauchno-tekhn. informatsii elektrotekhn.promyshl. i priborostroeniia, 1960. 359 p. (MIRA 14:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvarochnogo oborudovaniya (for Gromyko, Yegorova, Terent'yev, Tolub'yeva). 2. Gosudarstvennyy nauchno-tekhnicheskii komitet (for Arifmetchikov). 3. TSentral'nyy institut nauchno-tekhnicheskoy informatsii elektrotekhnicheskoy promyshlennosti i priborostroyeniya (for Rodionov).

(Welding--Equipment and supplies)

KOCHANOVSKIY, N.Ya., kand.tekhn.nauk, red.; GROMYKO, L.G., red.;  
YEGOROVA, I.A., red.; THERENT'YEV, Yu.Ya., red.; TOLUB'YEVA,  
Ye.P., red.; ARIFMETCHIKOV, F.Y., red.; RODIONOV, Yu.I., red.;  
BALASHOV, V.I., tekhn.red.; BURLAKOVA, O.Z., tekhn.red.

[Welding equipment; catalog-handbook] Spravochnoe oborudovanie; katalog-spravochnik. Moskva, TSentr. in-t nauchno-tekhn. informatsii elektrotekhn.promyshl. i priborostroeniya, 1960. 359 p.  
(MIRA 13:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvaroch-nogo oborudovaniya (for Gromyko). 2. Gosudarstvennyy nauchno-tekhnicheskyy komitet (for Arifmetchikov). 3. TSentral'nyy institut nauchno-tekhnicheskoy informatsii (for Rodionov).  
(Welding--Equipment and supplies)



L-2824-63

ENT(1)/EWG(k)/EWP(q)/ENT(m)/BDS

AFFTC/ASD/ESD-3/APGC

Pz-4 JD/AT/IJP(C)

ACCESSION NR: AT3003020

S/2927/62/000/000/0281/0282

AUTHOR: Saidov, M. S.; Arifov, A.

67

5 TITLE: Effect of impurities on the current-voltage characteristic of silicon photocells [Report at the All-Union Conference on Semiconductor Devices, Tashkent, 2-7 October, 1961]

SOURCE: Elektronno-dy\*rochny\*ye perekhody\* v poluprovodnikakh, Tashkent, Izd-vo AN UzSSR, 1962, 281-282

TOPIC TAGS: silicon photocell, silicon photocell impurity

ABSTRACT: The fundamental authors' assumption is this: a p-n junction region that has an abnormally high carrier concentration is a linear dislocation with an impurity atmosphere. A prolonged annealing of the semiconductor and introduction of impurities by diffusion must redistribute the impurities according to their energies of interaction with the dislocations. Hence, variations in the reverse current density of a photocell (with an impurity) reveal the impurity-dislocation interactions. The experiments included photocells prepared from a p-Si having a resistivity of 0.6 ohm.cm, a lifetime of minority carriers 2 microsec, and a linear-dislocation

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L 12824-63

ACCESSION NR: AT3003020

density of  $10^4 \text{ cm}^{-2}$ . Al, Zn, and Cd were used as impurities. The experimental reverse-current-voltage characteristics show that a 9-hour annealing at 1150C results in unequal increases in the reverse currents for various impurities. Orig. art. has: 1 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 15May63

ENCL: 00

SUB CODE: PH, GE

NO REF SOV: 002

OTHER: 001

Card 2/2

L 00270-66 EWT(1)/EEC(k)-2/T/EWA(h) IJP(c)

ACCESSION NR: AP5020858

UR/0166/65/000/004/0055/0058

AUTHORS: Saidov, M. S.<sup>44</sup>; Arifov, A.<sup>44</sup>; Yusupova, M.<sup>44</sup>

TITLE: Excess current of a tunnel diode <sup>25, 44</sup>

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 4, 1965, 55-58

TOPIC TAGS: tunnel current, tunnel diode, tunnel effect, impurity center, semiconductor band structure

ABSTRACT: Contrary to tunnel diode theory, at minimum voltage ( $V_{\min}$ ) the current is 6-7 orders of magnitude larger than the diffusion current ( $I_d$ ). The excess current ( $I_{ex}$ ) is explained with the help of eight experimental findings. On the basis of the size and temperature dependence, the tunnel current through the deep bands ( $I_{db}$ ) is the basic factor, and two mechanisms for  $I_{db}$  are proposed. If the free levels of the p-region correspond to the impurity level, the captured electron can pass into the p-region (see Fig. 1 on the Enclosure). The other mechanism may occur if the impurities are present at maximum solubility. In this case the distortion regions of the individual atoms overlap, and the electrons have a free Card 1/4

L 00270-66

ACCESSION NR: AP5020858

movement due to the tunnel effect. With a deep acceptor impurity (when an external field reduces the barrier until  $E_a$  corresponds with the Fermi level of the n-region) the electrons in the acceptor level pass into the free level of the conduction zone (see Fig. 2 on the Enclosure). The analytical expression for  $I_{db}$  indicates a negative temperature coefficient, which explains the curve bulges at low temperatures. The positive temperature coefficient, under ordinary conditions, indicates other contributing current components due chiefly to ohmic currents and to nonuniformities in the semiconductor, producing local micro-junctions. Tests of n-germanium held at 300C before fusing with a tin-gallium alloy at a controlled heating and cooling speed indicate that, although  $I_{min}$  is decreased and  $I_{max}/I_{min}$  is improved, the effect is slight and other fabricating improvements must be sought. Orig. art. has: 1 table, 3 figures, and 4 formulas.

ASSOCIATION: Fiziko-tehnicheskiy institut, AN UzSSR (Physics-Engineering Institute, AN UzSSR)

SUBMITTED: 15Feb64

ENCL: 02

SUB CODE: EC

NO REF SOV: 005

OTHER: 000

Card 2/4

L-00270-66

ACCESSION NR: AP5020858

ENCLOSURE: 01

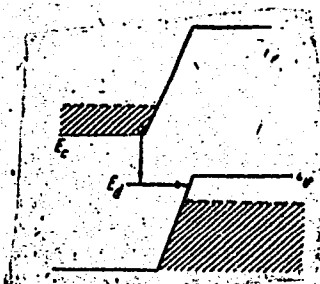


Fig. 1.

Possible mechanism of excess current with the participation of deep impurity levels

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ACCESSION NR: AP5020858

ENCLOSURE: 02

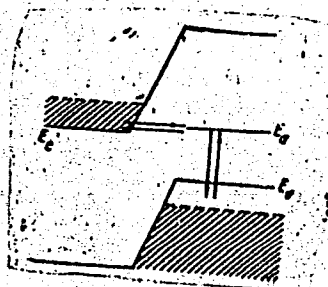


Fig. 2.  
Participation of deep acceptor levels in the tunnel current

*YW*  
Card 4/4

ARIFOV, A.A.; SAIDOV, M.S.

Volt-ampere characteristics of silicon photoelectric cells.  
Geliotekhnika no.5:29-31 '65. (MIRA 19:1)

1. Fiziko-tekhnicheskii institut AN UzSSR. Submitted June 18, 1965.

L 38176-66 EWT(1) IJP(c) AT

ACC NR: AP6018087

(A)

SOURCE CODE: UR/0377/65/000/005/0029/0031

AUTHOR: Arifov, A. A. (Academician AN UzSSR); Saidov, M. S.

7/  
B

ORG: Physico-Technical Institute, Academy of Sciences, UzSSR (Fiziko-tehnicheskiy institut AN UzSSR)

TITLE: Investigation of the volt-ampere characteristics of silicon photocells

SOURCE: Geliotekhnika, no. 5, 1965, 29-31

TOPIC TAGS: solar energy conversion, volt ampere characteristic, solid state device, hole conduction, pn junction

ABSTRACT: The forward branch of the volt-ampere characteristics of photocells within the framework of the existing theories of pn conduction is discussed on the basis of an earlier work by the authors on the counter volt-ampere characteristics of silicon photocells heat-treated in the presence of various impurities. The authors consider the influence of various impurities (aluminum, cadmium, etc.) and heat treatment in vacuum or air upon the current passing through the pn junction in the case of forward voltages. The results are based upon the equations developed by A. I. Kapitonov, V. M. Tuchkevich, and V. Ye. Chelnokov (1962). Orig. art. has: 1 figure.

SUB CODE: 20,10/

SUBM DATE: 18Jun65/

ORIG REF: 003/

OTH REF: 001



ARIFOV, L.Ya.; GUTMAN, I.I.

Inertial frames of reference. Part 2. Izv. AN Uz SSR. Ser.  
fiz.-mat. nauk 9 no.1:93-97 '65. (MIRA 18:6)

1. Institut yadernoy fiziki AN UzSSR.

L 04284-67 EWT(1) GW

ACC NR: AR6004678

SOURCE CODE: UR/0269/65/000/010/0061/0061

AUTHORS: Arifov, L. Ya.; Gutman, I. I.

TITLE: Weil space and cosmological models

SOURCE: Ref. zh. Astronomiya, Abs. 10.51.455

REF SOURCE: Dokl. AN UzSSR, no. 3, 1965, 14-17

TOPIC TAGS: cosmology, general relativity theory

ABSTRACT: To obtain cosmological models without singularities and with a sufficiently great age, the Weil manifold is considered instead of the space-time of the general theory of relativity and instead of the Einstein equations--a more general system of 14 equations relating the metric tensor and vector  $\Lambda_\mu$  ( $\mu = 0, 1, 2, 3$ ) with the experimentally determined variable quantity  $\chi$  and four-dimensionally symmetric space metric

$$ds^2 = H^2(\tau) (dx^0^2 - dx^1^2 - dx^2^2 - dx^3^2);$$

( $\tau = 1/c(x^0^2 - x^1^2 - x^2^2 - x^3^2)$  and  $c$  is the velocity of light). The field equations applied to a uniform medium without pressure lead to two relations for the density  $\rho$ ,  $H$ , and  $\chi$ . In the case of  $\chi = \text{const}$  they lead to the ordinary Friedman equations and the obtained exact relations for the Hubble constant and red shift lead to the Friedman cosmology equations. The red shift is again explained by the effect of the change in frequency of radiation from atoms at rest in Weil space. Possible non-Friedman models of the universe are analyzed under various assumptions relating  $H$  and  $\chi \neq \text{const}$ . Two of the models lose the defects of isotropic models of the general theory of relativity.

V. Zakharov [Translation of abstract]

Card 1/1 SUB CODE: 03, 20

UDC: 523.11

26.5000  
11.5000

80010

AUTHORS: Dremin, A. N., Pokhil, P. F., Arifov, M. I. S/020/60/131/05/044/069  
B011/B117

TITLE: Effects of Aluminum on the Detonation Constants of Trotyl<sup>1</sup>

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1140-1142 (USSR)

TEXT: Based on their results, the authors arrived at the following conclusion concerning the behavior of aluminum in the chemical reaction space of the detonation wave of trotyl: with high-density aluminum charges (of all sizes), this metal is inert in the front of the detonation wave. Aluminum begins to react with decreasing density of the charge. Since thereby lower oxides (AlO and Al<sub>2</sub>O) with lower heats of formation (39 kcal/mole for Al<sub>2</sub>O as compared to the heat of formation for Al<sub>2</sub>O<sub>3</sub> which is 393.1 kcal/mole) form, and oxygen previously bound to other products is consumed, Al has an endothermic effect. Moreover, the composition of the gases is impaired (possibly their quantity is decreased) when aluminum oxides of any type form which must necessarily lead to the reduction of the detonation constants also. A. F. Belyayev (Ref 8) convincingly proved that the efficiency of explosives containing high-molecular explosion products is less than that of substances generating low-molecular explosion products. With a further reduction of the charge density, conditions may arise under which the lower aluminum oxides in the

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Effects of Aluminum on the Detonation Constants of  
Trotlyl

80010

S/020/60/131/05/044/069  
B011/B117

reaction space are converted to  $Al_2O_3$ . This should necessarily lead to an increase of the detonation constants. With high charge densities, these constants are lowered by aluminum of each particle size. For comparison with aluminum, the authors made experiments with admixtures of quartz sand ( $SiO_2$ ) and tungsten to the trotlyl (Table 1). Unexpectedly, the dependence of the detonation velocity of trotlyl mixed with fine sand on the charge density (Fig 1) showed a sharp break at a density of  $1.54 \text{ g/cm}^3$ . Apparently,  $SiO_2$  passes over into another modification. The authors explain the increasing effect of  $SiO_2$  found in their experiments by the increased compressibility. The experimental values obtained for the velocity of motion of the explosion products of trotlyl with inert admixtures can be well described by the equation  $u = u_0 q_0 / q_1$  (1), with  $u_0$  being the velocity of explosion products of pure trotlyl for a density of the mixed charge  $q_0$ , and  $q_1$  the density of the mixture. The velocities of the explosion products measured in the experiments and calculated according to equation (1) are given in table 2. Hence, it follows that the  $0.2 \mu$  aluminum

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Effects of Aluminum on the Detonation Constants of  
Trotyl

S/020/60/131/05/044/069  
B011/B117

particles with a charge density of  $1.49 \text{ g/cm}^3$  have a stronger reducing effect on the characteristics of the detonation wave as compared to the effect exerted by inert admixtures. This proves that aluminum reacts to a different extent according to the size of its particles. The authors disprove the assumption made by S. B. Ratner and Yu. B. Khariton (Ref 4) according to which  $\text{Al}_2\text{O}_3$  forms in the reaction space which absorbs considerable quantities of heat on evaporation.  $\text{Al}_2\text{O}_3$  does not exist at all in the vapor phase, but is decomposed to  $\text{AlO}$  which, in turn, passes over into  $\text{Al}_2\text{O}$  (Ref 5). There are 1 figure, 2 tables, and 8 references, 6 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of  
Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: November 4, 1959, by N. N. Semenov, Academician

SUBMITTED: November 4, 1959

Card 3/3

L 62209-65 EWT(1)/EPF(c) P1-4 IJP(c) WW/GG

ACCESSION NR: AP5011674

UR/0166/65/000/002/0060/0066

AUTHOR: Arifov, L. Ya.

TITLE: Rotation of the plane of polarization of light in a field of inertial and gravitational forces

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 2, 1965, 60-66

TOPIC TAGS: general relativity, special relativity, space-time manifold, light polarization, polarization plane rotation, inertial force field

ABSTRACT: The rotation of the plane of polarization of light is interpreted as a manifestation of the existence of inertial forces or of non-inertial nature of the four-dimensional space. Connections are established, on the basis of the appropriate transformation rules, between the components of four-dimensional and the corresponding three-dimensional tensors. Since the Riemannian space-time manifolds which are admitted by the general theory of relativity do not contain

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L 62209-65

ACCESSION NR: AP5011674 .

inertial reference systems, in a gravitational field there always exists rotation of a 3-vector corresponding to parallel translation of a 4-vector. Consequently, the plane of polarization of an electromagnetic wave should rotate in a gravitational field. The rotation of the plane of polarization of light in the field of centrifugal inertial forces is also calculated, and it is shown that the maximal rotation angle occurs when the wave is linearly polarized at an angle of  $45^\circ$ . The author thanks L. L. Il'inskiy for numerous discussions and L. G. Yakovlev who stimulated his interest in this problem. Original article has: 24 formulas

ASSOCIATION: Institut yadernoy fiziki AN UzSSSR (Institute of Nuclear Physics AN SSSR)

SUBMITTED: 25Jul64

ENCL: 00

SUB CODE: GP, OP

NR REF SOV: 005

OTHER: 000

Card

2/2

ACC NR: AP7001178

SOURCE CODE: UR/0166/66/000/005/0048/0053

AUTHORS: Arifov, P. U.; Gol'danskiy, V. I.; Sayasov, Yu. S.

ORG: Physicotechnical Institute, AN UzSSR (Fiziko-tekhnicheskiy institut AN UzSSR);  
Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Deceleration spectrum of light particles in heavy gas, with a consideration of the capture process

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 5, 1966, 48-53

TOPIC TAGS: kinetic theory, kinetic equation, inelastic interaction, heavy particle, light particle, *PARTICLE DISTRIBUTION, ATOM, POSITIVE ION, ELECTRIC FIELD*

ABSTRACT: A general study is made of the slowing-down process of electrons and positrons in a stationary cloud of atoms and positive ions. Starting from Massey and Burhops (G. Messi and Ye. Barkhop. Elektronnyye i ionnyye stolknoveniya, IL, 1958, gl. 1, 5; gl. 3, 4), two kinetic equations that describe the drift of light particles in a heavy gas under the action of electric fields, the following second order differential equation is obtained

$$-\frac{eF}{3m} \frac{d}{dv} \left( s \frac{eF}{NQ_{sc}} \frac{df_0}{dv} \right) + \frac{s}{m} NQ_{in} f_0 = \frac{2}{M} \frac{d}{dv} (s^2 NQ_d f_0) + \frac{R(v)}{2v},$$

where R is a source term,  $Q_d$  is a momentum transfer cross section, and  $Q_{sc} = Q_{in}(\text{decay})$

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ACC NR: AP7001178

cross section) +  $Q_d$ . In the absence of an electric field the stationary distribution for the light particles can be obtained readily. For no electric fields this is given by

$$f = f_0 = \frac{M}{m} \frac{j m^2}{16 \pi N Q_d \cdot \epsilon^2} = \frac{M}{m} \frac{j}{4 \pi N Q_d \cdot v^2}$$

for zero loss processes, and by

$$f = f_0 = \frac{M}{m} \frac{j m^2}{16 \pi N Q_d \cdot \epsilon^2} e^{-\frac{M}{2m} \int_0^{E_{rp}} \frac{Q_{in} d\epsilon}{Q_d \cdot \epsilon^2}}$$

if loss processes are included. The problem becomes more complicated in the presence of an electric field. For a weak electric field one can calculate a first order correction to the stationary solution, corresponding to elastic-inelastic momentum transfer processes. This yields

$$f_0 = e^{-\frac{m}{M} \int_0^{\frac{v^2}{2}} \frac{d\epsilon}{\epsilon^2}} \left[ B + \frac{3m^2}{2eF} \int_0^{\frac{v^2}{2}} \left( \frac{1}{4\pi} + C_0 - \int_0^{v_{rp}} N Q_{in} \cdot v^3 \cdot f_0^{(11)} dv \right) \frac{d\epsilon}{\epsilon^2} \cdot e^{\frac{m}{M} \int_0^{\frac{v^2}{2}} \frac{d\epsilon}{\epsilon^2}} \right]$$

Some numerical results are given in tabular form to compare the various distribution functions derived above. Orig. art. has: 13 equations and 1 table.

SUB CODE: 20/ SUBM DATE: 27May66/ ORIG REF: 001/ OTH REF: 010

Card 2/2

L 11086-65 EWT(m) DIAAP/AFWL/SSD/ESD(t)

ACCESSION NR: AP4046630

S/0181/64/006/010/3118/3123

AUTHORS: Arifov, P. U.; Gol'danskiy, V. I.; Sayasov, Yu. S.

TITLE: Determination of the momentum distribution of annihilating electron-positron pairs from the gamma-quantum angular distribution (B)

SOURCE: Fizika tverdogo tela, v. 6, no. 10, 1964, 3118-3123 19

TOPIC TAGS: annihilation reaction, electron, positron, angular momentum distribution, gamma quantum distribution

ABSTRACT: It is shown that the formula customarily used to reconstitute the momentum distribution from the  $\gamma$ -quantum angular correlation is based on assumptions that are too approximate. The author consequently derives a relation between the density  $\rho(p)$  of the momentum distributions of  $e^+e^-$  pairs and the coincidence counting rate  $I$  (as a function of angle), in which correct account is taken of the geometry of the experiment and of the variability of the

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L 11086-65

ACCESSION NR: AP4046630

probability that the angles of the emitted annihilation  $\gamma$  quanta can be correctly registered by the detectors. The conditions under which the new formulas give results that differ appreciably from the old formula are indicated. It is also shown that the new formulas can also be used directly to determine the momentum distribution of slow neutral pions from the angular correlation of the  $\gamma$  quanta produced by their decay. Orig. art. has: 2 figures and 11 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moscow (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 15May64

ENCL: 00

SUB CODE: NP

NR REF SOV: 002

OTHER: 003

Card 2/2

ACCESSION NR: AP4025897

S/0166/64/000/001/0053/0060

AUTHORS: Gruish, D. D.; Rakhimbayeva, N.; Ikramov, G.; Arifov, T.

TITLE: Investigations of secondary ion emission under bombardment of metals by low energy ions

SOURCE: AN UzSSR. Izv. Seriya fiziko-matematicheskikh nauk, no. 1, 1964, 53-60

TOPIC-TAGS: secondary ion emission, ion beam, alkaline ion, barium, tungsten target, molybdenum target, modulated beam, ionization potential pump DRN 10, oscillograph EO 7, lamp 6Zh7

ABSTRACT: Curves of secondary emission coefficient  $K$  in relation to beam energy of  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Rb}^+$ ,  $\text{Cs}^+$ , and  $\text{Ba}^+$  ions on cold W and Mo targets were obtained for energy levels  $E_0 \leq 400$  ev. The alkali ions and  $\text{Ba}^+$  were obtained from surface ionization of alkali-halide and  $\text{BaCl}_2$  vapors entering a heated tungsten filament in a vaporizer. The target chamber was evacuated by a DRN-10 pump and degassed at 2200K (Ni at 1200K, Ta at 1700K). The double modulation oscillograph technique was used to determine the secondary ion energies. The primary beam intensity was  $5 \times 10^{-9}$  amps modulated by a P-pulse with an 80-300 cycle frequency. The EO-7

Card 1/2

ARIFOV, U.

Arifov, U. and Shuppe, G. H. "Positive surface ionization of atoms and molecules",

Trudy Fiz.-tekhn. in-ta (Akad. nauk Uzbek. SSR), Vol. II, Issue 1, 1948, p. 19-68, -  
Bibliog: p. 67-68.

SoL U-3261, 10 April 53, (Letopis 'Zhurnal 'nykh Statey, No. 12, 1949).

ARIFOV, U.A.; AYUKHANOV, A.Kh.; ISLAMOV, I.I., chlen-korrespondent.

Modernized drying cabinet. Dokl. AN Uz.SSR no.8:30-33 '49. (MLRA 6:5)

1. Fiziko-tekhnicheskii institut AN Uz.SSR (for Arifov, Ayukhanov).
2. Akademiya Nauk Uzbekskoy SSR (for Islamov). (Drying apparatus)

ARIFOV, U.  
CA

Determination of the absolute ionization coefficient on the surface of incandescent tungsten. U. Arifov, A. Kh. Ayukhanov, and V. M. Loytsov (Acad. Sci. Uzbek S.S.R., Tashkent). *Doklady Akad. Nauk S.S.S.R.* 68, 461-3 (1949). — Alkali metal atoms impinge on an incandescent W wire at the rate of  $N_0$  atoms/sec. With the collector pos.,  $N_0 = n A e^{-\lambda_0/r}$  ( $n$  = no. of adsorbed atoms at equil.,  $\lambda_0$  = heat of evapn. of atoms); in this case, the adsorbed alkali metal can evap. only in the form of neutral atoms. With the collector neg.,  $N_0 = n^+(A e^{-\lambda_0/r} + B e^{-\lambda_+/r})$  ( $\lambda_+$  = heat of evapn. of pos. ions); in this case, the alkali metal can evap. in the form either of atoms or of ions. If the potential of the collector is suddenly changed from pos. to neg., the ionic current falls from an initial max.,  $I_0$ , to a const.  $I_+$ . Since  $I_0 = n S B e^{-\lambda_0/r}$  and  $I_+ = n^+ S B e^{-\lambda_+/r}$  ( $S$  = surface area of the wire),  $I_0/I_+ = n/n^+ = 1 + (n_0/n_+)$ , where  $n_+$  and  $n_0$  = no. of ions and of atoms, resp., emitted from 1 sq. cm. of surface per sec. Hence the ionization coeff.  $k = n_+/ (n_0 + n_+) = (I_0 - I_+)/I_0$ . The current is oscillographed under alternating rectangular impulses applied to the collector, at a frequency (200 sec.<sup>-1</sup>) insuring complete evapn. of the excess adsorbed atoms over a half-period. Oscillograms are given for incandescence temps. of 1100, 1215, 1310, and 1300°K; max. ionization is at 1100°K. As a function of the temp.,  $k$ , detd. from  $I_0$  and  $I_+$  measured on the oscillograms, attains 0 at 1310°K, then falls to ~80 at 1300°K. The exptl. curve of  $k$  is close to the Saha-Langmuir line, with  $\beta \approx 1$  (Copley and Phillips, *Phys. Rev.* 48, 900 (1945)) at the max. and up to about 1310°K, but comes increasingly nearer to the S.-L. line drawn with  $\beta = 2$  with further increasing temp. This complex behavior is attributed to surface inhomogeneity. N. Thon

Physico tech. Inst.

1951

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[illegible]

ARIFOV, U.

CA

Oscillographic determination of the heats of adsorption of ions and atoms of alkali metals with the aid of functional sweep. U. Arifov and V. M. Lovtsov (Phys. Tech. Inst. Acad. Sci. Uzbek S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 78, 345-6 (1980).—The data of the const.  $\epsilon$  in the formula for the ionic current intensity  $I$  from an incandescent metal,  $I = I_0 e^{-\epsilon}$  (where  $\epsilon = A_0 - \lambda_0/RT + B_0 - \lambda_0/RT =$  sum of the probabilities of evapn. of atoms and ions per sec., and  $\lambda_0$  and  $\lambda_1 =$  heats of evapn. of atoms and ions, resp.), is simplified, following the procedure of Tolstol and Poodlov (*Zhur. Eksp. Teor. Fiz.* 19, 421 (1949)), by exponential, instead of linear, sweep of the oscillograph beam, which converts the exponential oscillogram into a straight line. This straightening-out is attained, in rectangular impulses, by suitable adjustment of the resistance  $R$  and the capacity  $C$  of the  $RC$  circuit, which then gives immediately  $1/\epsilon = \tau = RC$ . From the so-obtained  $\tau$ , the values of  $\lambda_0$  and  $\lambda_1$  are obtained by plotting the equations of Starodubtsev (*C.A.* 44, 6600b). Measurements on K on incandescent W gave  $\lambda_0 = 2.41$  e.v., in good agreement with both the detns. of St. and of Evans (*C.A.* 27, 1790). The magnitude  $\tau$  is the "life-time" of the adsorbed atoms, i.e. the time necessary for the ionic current  $I$  to fall to  $1/e$  times  $I_0$ . For K,  $\tau$  increases from  $5.2 \times 10^{-4}$  to  $4.1 \times 10^{-3}$  sec. with the temp. varying from 1250 to 1150°K. N. Thon

1161

ARIFOV, U. A.

Electronics, Electronic and Ionic Emission (1731)

Dokl. AN Uzb. SSR, No 1, 1953, pp 12-16. "Method of Double Modulation for the Investigation of Secondary Emission Under the Action of Collision by Ions."

To investigate the dynamics of secondary ionic emission a method was developed that permits one to study the time characteristics of secondary processes. A beam of ions is freed of neutral particles and is modulated with respect to intensity by an oscillator generating rectangular impulses with a frequency of 500-1,000 cps (first modulation is directed against an incandescent target); the secondary ions are gathered by a collector whose potential relative to the target is modulated by a saw-toothed oscillator of 25 cps (second modulation).

SO: Referativnyy Zhurnal--Fizika, No 2, Feb 54; (W-30785, 28 July 1954)

Chemical Abstracts

Vol. 48 No. 5

Mar. 10, 1954

Dyes and Textiles Chemistry

Analysis of the products of evaporation during drying of cotton wool. *U. A. Arifov, V. I. Dulova, A. Kh. Ayukhanov, and M. V. Vostrilova. Doklady Akad. Nauk Uzbek. S.S.R. 1949, No. 8, 26-9.*—Cotton wool (I) is dried 3-4 hrs. at 3-4 mm. above 110° in a specially designed app. equipped with 2 traps cooled with liquid air, and the condensates in the traps are analyzed by oxidimetric methods with  $\text{KMnO}_4$ . The amt. of org. material (II) volatile with the  $\text{H}_2\text{O}$  vapors increases with rising temp. and amounts to about 0.2%. At 130-50° charring of I sets in. Samples of I, the seed of which has been crushed, are also dried and give higher yields of II which also increase with increased moisture content (III). At 105-30° even with high III and from crushed seeds the amt. of II is considerably less than the exptl. error permitted for the detn. of III in I.  
Gladys S. Macy

Phys. Tech. Inst, AN UzSSR-

ARIFOV, Ubay

"Investigation of the Processes Occuring when Metals are Bombarded with Positive Ions," (Dissertation), Academic Degree of Doctor in Phycomathematical Sciences, based on his defense, 15 February 1954, on the Council of the Leningrad Physicotechnical Inst. Acad Sci USSR.

Physicotechnical Inst. Acad Sci Uzbek SSR.

■-M- 3,054,778,    @    2 Oct 57

Re For U. R

2

142. Method of measuring the rate of flow of water by bombarding a substance with a beam of electrons.

As in 141, but the substance is a liquid.

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1. The method of measuring the rate of flow of water by bombarding a substance with a beam of electrons.

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HAIRY. D. H.

USSR/Nuclear Physics - Secondary emission

FD-740

Card 1/1 : Pub 146-10/22

Author : Arifov, U. A., and Ayukhanov, A. Kh.

Title : Angular distribution of secondary ions during bombardment of tantalum target with ions of alkali metals

Periodical : Zhur. eksp. i teor. fiz., 27, 87-93, Jul 1954

Abstract : The energy distribution and the intensity of secondary ions Na and Rb as related to the incident angle of primary ions and the exit angle of secondary ions is analyzed in the case of a heated tantalum target. Angular dependence of the peak energy of the scattered ions which coincides with values of energy of elastic colliding particles is found to exist. The linear dependence of intensity of secondary ions on the exit angle was detected. Indebted to Prof. S. V. Starodubtsev. 3 references.

Institution : Physicotechnical Institute. Acad Sci. Uzbek SSR

Submitted : October 31, 1953



ARIFOV, U. A.

Handwritten signature: *Handwritten signature*  
The metal ions were obtained by evaporation of halogen  
and ionization on a charged electrode.

USSR / Farm Animals. Silkworm.

Q-6

Abs Jour: Ref Zhur-Biol., No 12, 1958, 54891.

Author : Arifov U. A., Gumanskiy G. A., Kleyn G. A., Pash-  
inskiy S. Z., Schchenkov S. N.

Inst : Not given.

Title : The Effect of Gamma Rays on the Live Chrysa-  
lides of the Mulberry-Feeding Silkworm.

Orig Pub: Dokl. AN UzSSR, 1957, No 4, 9-12.

Abstract: The cocoons with live pupae of the breed  
Soviet Baghdad were subjected to gamma irradi-  
ation (source Co<sup>60</sup>, intensity 15 curies) with  
doses of 2 to 700 thousands r. With the in-  
crease of the doses of irradiation, the death  
rate of the pupae was augmenting. Irradiation  
with a dose of 240 thousands r. was destroying  
all 5-day old pupae and the irradiation with a

Card 1/2

69

ARIFOV, U.A.

AUTHORS: Arifov, U. A., Ayukhanov, A.KH., Starodubtsev, S. V., 56-4-3/54

TITLE: On the Coefficient of Diffusion of Ions as a Function of the Ratio of the Masses of Colliding Particles (O zavisimosti koeffitsiyenta rasseyaniya ionov ot sootnosheniya mass stolkivayushchikhsya chastits)

PERIODICAL: Zhurnal Eksperim i Teoret. Fiziki, 1957, Vol. 33, Nr 4, pp. 845-850, (USSR)

ABSTRACT: By means of the method of double modulation the secondary emission of ions was investigated for the case that the masses of the bombarding ions are larger than the atom masses of the target. The following conclusions may be drawn.

- 1) Positive Cs-ions enter into interaction with nickel atoms according to the condition  $V_i \varphi, m_1, m_2$ :
  - a) Neither in the case of a cold (300°K) nor of a hot nickel surface (1350°K) may there be detected any secondary ion-electron emission
  - b) The secondary ion emission from a pure nickel surface (at high temperature) contains only the vaporized ions which formed on the surface of the target after a diffusion process.
- 2) Positive Ba-ions enter interaction with molybdenum atoms according to the condition  $V_i \varphi, m_1, m_2$ :
  - a) Neither in the case of a cold (300°K) nor of a warm molybdenum surface (1300°K) may there be detected any secondary ion-electron

Card 1/2

On the Coefficient of Diffusion of Ions as a Function of the Ratio of the Masses of Colliding Particles. 56-4-3/54

emission.

b) No secondary ion emission is observable.

There are 4 figures and 4 Slavic references.

ASSOCIATION: Physics-technical Institute AN Usbek SSR (Fiziko-tehnicheskiy institut Akademii nauk Uzbekskoy SSR)

SUBMITTED: April 10, 1957

AVAILABLE: Library of Congress

Card 2/2

ARIFOV, U. A., BARNOV, V. A., GUMANSKIY, G. A., KILLEYN, G. A., PASHINSKIY, S. Z.,  
TSEHELIDZE, L. M., TSETSKHLADZE, T. V., CHKHEIDUE, T. H., and SHENKOV, S. N.

"Treatment of Silkworm Cocoons by Radiation."

paper to be presented at 2nd UN Intl.' Conf. on the peaceful uses of Atomic  
Energy, Geneva, 1 - 13, Sept 58.

ARIFOV, U.A.; AYUKHANOV, A.Kh.; STARODUBTSEV, S.V.

Secondary emission of negative particles during the bombardment of foreign films on pure metals with alkali metal ions. Izv. AN Uz.SSR. Ser. fiz.-mat. nauk no.2:107-115 '58. (MIRA 11:10)

1. Fiziko-tekhnicheskiy institut AN UzSSR.  
(Ion beams) (Alkali metals)

ARIFOV, U.A.; GUMANSKIY, G.A.; KLEYN, G.A.; PASHINSKIY, S.Z.; SHCHENKOV, S.N.

Physical and technological properties of silkworm cocoons  
killed by  $\gamma$ -rays. Izv. AN. Uz. SSR. Ser. fiz.-mat. nauk  
no.3:5-9 '58.

(MIRA 11:10)

1. Fizike-tekhnicheskiy institut AN UzSSR.

(Silkworms) (Gamma rays--Industrial application)

ARIFOV, U.A.; KLEYN, G.A.; ABLIYAYEV, Sh.A.; VASIL'YEVA, Ye.K.; FILIPPOV, A.N.;  
SLEPAKOVA, S.I.; GETSONOK, B.I.; ZAUROV, R.I.

Studying gamma-ray effects in natural silk. Izv. AN Uz. SSR. Ser.  
fiz.-mat.nauk no.4:5-11 '58. (MIRA 11:11)

1. Fiziko-tekhnicheskiy institut AN Uz. SSR.  
(Silk) (Gamma rays)



ARIFOV, U.A.; RAKHIMOV, R.

Existence of potential extraction of electrons during bombardment of metals by ions of inert gases. Izv.AN Uz.SSR.Ser.fiz.-mat. nauk no.5:5-13 '58. (MIRA 11:12)

1. Fiziko-tekhnicheskiy institut AN UzSSR.  
(Electron emission)

ARIFOV, U.A., akademik; KLEYN, G.A.; ABLYAYEV, Sh.A.; VASIL'YEVA, Ye.K.;  
FILIPPOV, A.N.; SLEPAKOVA, S.I.; GETSONOK, B.I.; ZAUROV, R.I.

Effect of gamma rays on the properties and structure of natural silk.  
Dokl. AN Uz. SSR no.6:5-9 '58. (MIRA 11:9)

1. AN UzSSR (for Arifov). 2. Fiziko-tekhnicheskiy institut AN UzSSR,  
Institut yadernoy fiziki AN UzSSR i Uzbekskiy nauchno-issledovatel'skiy  
institut shelkovoy promyshlennosti.  
(Gamma rays) (Silk)

ARIFOV, U.A.; AYUKHANOV, A.Kh.; STARODUBTSEV, S.V.; KHADZHIMUKHAMEDOV, Kh.Kh.

Methods for investigating secondary processes caused by ions at high target temperatures during thermoelectronic emission. Izv. AN Uz.SSR.Ser.fiz.-mat.nauk no.5:15-22 '88. (MIRA 11:12)

1. Fiziko-tekhnicheskiy institut AN UzSSR.  
(Electron emission)

ARIFOV, U.A.; RAKHIMEV, R.

Comparative investigation of electron emission from metals bombarded by ions of inert gases and alkali elements with energies up to 10 kev. Izv. AN Uz. SSR. Ser.fiz.-mat.nauk no.6:49-55 '58.

(MIRA 12:2)

1. Fiziko-tekhnicheskiy institut AN UzSSR.  
(Electron emission) (Ion beams)

ARIFOV, U.A., akademik; RAKHIMOV, R.

Effect of temperature and work function of metals on potential  
electron emission. Dokl. AN Uz. SSR no. 12:15-18 '58.

(MIRA 12:1)

1. AN UzSSR (for Arifov). 2. Institut yadernoy fiziki AN UzSSR.  
(Electron emission)

AKHCOV, U.A.

PHASE I BOOK EXPLOITATION

SOV/4536

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959

Tezisy dokladov (Outlines of Reports of the Tashkent Conference on the Peaceful Uses of Atomic Energy) Tashkent, Izd-vo AN Uzbekskoy SSR, 1959. 229 p. 2,000 copies printed.

Sponsoring Agencies: Akademiya nauk Uzbekskoy SSR; Nauchno-tehnicheskij komitet Soveta Ministrov UzSSR.

Resp. Ed. for this book: L.G. Gurvich; Ed. of Publishing House: I. G. Gaysinskaya; Tech. Ed.: V. P. Bartseva.

**PURPOSE:** This book is intended for nuclear physicists and other members of the scientific community interested in recent progress in the peaceful uses of atomic energy.

**COVERAGE:** This collection of abstracts of reports and papers read at the Tashkent Conference on the Peaceful Uses of Atomic Energy reports on research on a number of theoretical problems in nuclear and radiation physics, practical problems

Card 1/28

Outlines of Reports of the Tashkent Conference (Cont.)

SOV/4586

and methods in the preparation of radioactive isotopes, and the application of isotopes in industry, geology, agriculture, medicine, plant and animal biology, and other branches of the national economy and scientific research. The Table of Contents has been expanded to include authors and titles of abstracted papers appearing in section headings "Plenary Sessions" through "Radioactive Isotopes and Nuclear Radiations in Chemistry". No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Plenary Sessions

[Arifov, U. A., Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AS Uzbekskaya SSR), Perspectives for the Development of Scientific Research at the Institute of Nuclear Physics AS Uzbek SSR ]

5

[Kulish, Ye. Ye., and G. M. Fradkin, Glavnoye upravleniye po ispol'zovaniyu atomnoy energii pri Sovete Ministrov SSSR (Main Administration for Utilization of Atomic Energy of the Council of Ministers of the USSR). Production of Radioactive Isotopes in the Soviet Union]

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--Card 2/28

Outlines of Reports of the Tashkent Conference (Cont.) SOV/4586

- ✓ [Arifov, U. A., Institute of Nuclear Physics AS Uzbekskaya SSR. Problem of the Charge-Energy Balance During Collision of Slow Atomic Particles] 17
- [Denisov, F. P., K. V. Kosareva, and P. A. Cherenkov, Physics Institute imeni P. N. Lebedev AS USSR. Radiation Mechanism of Nuclear Fragments] 18
- [Azimov, S. A., U. G. Gulyamov, and B. Rakhimbayev, Fiziko-tekhnicheskii institut AN UzSSR (Physicotechnical Institute AS Uzbekskaya SSR). Investigation of Excited Fission Fragments] 18
- [Velyukhov, G. Ye., A. N. Prokof'yev, and S. V. Starodubtsev, Leningradskiy fiziko-tekhnicheskii institut AN SSSR (Leningrad Physicotechnical Institute AS USSR). Investigation of the Reactions of Capture by  $F^{19}$  and  $P^{31}$  at Neutron Energies of 14.1 Mev] 19
- [Gorbunov, A. N., V. A. Dubrovina, D. Kaipov, K. Kuvatov, A. I. Orlova, V. A. Osipova, V. A. Sakovich, V. S. Silayeva, F. A. Fomin, and P. A. Cherenkov, Physics Institute imeni P. N. Lebedev AS USSR. Investigation of Photodisintegration of Nitrogen, Oxygen and Neon] 19
- Card 6/28



Outlines of Reports of the Tashkent Conference (Cont.)

SOV/4586

[Breger, A. Kh., Physicotechnical Institute imeni L. Ya. Karpov. Scientific and Technical Bases for the Development of Radiation-Chemical Apparatus]

53

\*[Arifov, U. A., S. V. Starodubtsev, Ye. M. Lobanov, G. A. Kleyn, and S. Z. Pashinskiy, Institute of Nuclear Physics AS Uzbekskaya SSR. Installation of the Uzbek Academy of Sciences for Various Types of Gamma-Radiation Research and for Semi-Industrial Experiments.]

54

[Lobanov, Ye. M., A. P. Novikov, and A. A. Khaydarov, Institute of Nuclear Physics AS Uzbekskaya SSR. Using a Multichannel Scintillation Gamma-Spectrometer in Analysis of Rock Samples]

55

[Abdullayev, A. A., M. M. Romanov, Ye. M. Lobanov, A. P. Novikov, and A. A. Khaydarov, Institute of Nuclear Physics AS Uzbekskaya SSR. Determination by Radioactive Analysis of Indium Percentage in Sphalerites]

56

[Yermakov, V. I., Institut geologii i razrabotki goryuchikh iskopayemykh AN SSSR (Institute of Geology and of Prospecting for Mineral Fuels AS USSR). Experience in Using the Radiometric Method in Prospecting for Petroleum and Gas in Soviet Central Asia]

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Card 16/28

ARIFOV, U.A.

PLAZA WORK EXHIBITION NOV/71/13

International Conference on the Peaceful Use of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh polucheniye i primeneniye izotopov (Reports of Soviet Scientists; Production and Application of Isotopes) Moscow, Atomizdat, 1959, 588 p. (Series: Iiz: Trudy, vol. 6) 8,000 copies printed.

Eds. (Title page): G.V. Kurlyanov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences; Ed. (Inside book): Z.D. Andreyenko; Tech. Ed.: Z.D. Andreyenko.

PURPOSE: This book is intended for scientists, engineers, physicians, and biologists engaged in the production and application of atomic energy to peaceful uses; for professors and graduate and nongraduate students of higher technical schools where nuclear science is taught; and for the general public interested in atomic science and technology.

COVERAGE: This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 contains 32 reports on: 1) modern methods for the production of stable radioactive isotopes and their labeled compounds, 2) research results obtained with the aid of isotopes in the field of chemistry, metallurgy, machine building, and agriculture, and 3) consistency of isotopes in medicine. The volume was edited by G.V. Kurlyanov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences. See Sov/2031 for titles of volumes of the set. References appear at the end of the articles.

26. Zhadin, V.I., S.I. Ruznetsov, and T.Y. Timofeyev-Reesovskiy. Radiocative Isotopes for Solving Problems in Hydrobiology (Report No. 2317) 355
29. Arisov, G.I. Resorption Phenomena in the Lactal Gland (Report No. 2260) 347
30. Tretychkiy, I.A. (Deceased). Sulfur Tracer Penetration of the Skin, Its Mechanism in the Absorption of the Wool, and Its Secretion From the Organs of the Animal (Report No. 2318) 354
31. Arifov, U.A., I.D. Arzavskiy, V.A. Barov, G.A. Osmanskiy, G.A. Elyan, T.Z. Yemitskiy, L.M. Tshalish, T.Y. Yastibladis, T.S. Chibrikov, and S.E. Guseinov. Radiation Killing of Cereus of the Mulberry-feeding Silkworms (Report No. 2321) 362
32. Rubin, B.A., and L.Y. Melititskiy. Studying the Effect of Ionizing Radiation on the Protoplasm of Potato Tubers With Respect to Yearlong Storage (Report No. 2331) 375

TURAKULOV, Ya.Kh., doktor biolog. nauk, otv. red.; ABDULLAYEV, A.A.,  
kand. fiz.-mat. nauk, red.; ABDURASULOV, D.M., doktor med.  
nauk, red.; ARIFOV, U.A., akademik, red.; BORODULINA, A.A.,  
kand. biol. nauk, red.; IVASHEV, V.N., red.; IKRAMOVA, G.S.,  
red.; KIV, A.Y., red.; LOBANOV, Ye.M., kand.fiz.-mat. nauk,  
red.; NIKOLAYEV, A.I., kand. med. nauk, red.; NISHANOV, D.,  
kand. khim. nauk, red.; SADYKOV, A.S., akademik, red.;  
STARODUBTSEV, S.V., akademik, red.; TALANIN, Yu.N., kand.  
fiz.-mat. nauk, red.; GORKOVOY, P.I., red.; GOR'KOVAYA, Z.P.,  
tekh. red.

[Transactions of the Tashkent Conference on Peaceful Uses of  
Atomic Energy] Trudy Tashkentskoy konferentsii po mirnomu is-  
pol'zovaniyu atomnoi energii, Tashkent, 1959. Vol.3. 1961.  
501 p.

(MIRA 15:3)

1. Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atom-  
noy energii, Tashkent, 1959. 2. Akademiya nauk Uzbekskoy SSR  
(for Arifov, Sadykov, Starodubtsev).

(Atomic energy--Congresses)

21(8).

AUTHORS: Arifov, U.A., Akademik AN Uz SSR  
(Academician AS Uz. SSR), and  
Khadzhimukhamedov, Kh. Kh.

SOV/166-59-2-6/11

TITLE: Investigation of the Components of the Secondary Ionic Emission  
for High Temperatures of the Target and for an Appearing Thermal  
Electron Emission (Issledovaniye komponentov vtorichnoy ionnoy  
emissii pri vysokikh temperaturakh misheni v prisutstvi  
termoelektronnoy emissii)

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-  
matematicheskikh nauk, 1959, Nr 2, pp 47-50 (USSR)

ABSTRACT: The present paper is a completion of the recently published  
announcement [Ref 3]. With the vacuum apparatus and the method  
of the double modulation described in [Ref 3], direct measure-  
ments of the coefficients of the secondary ionic emission were  
carried out. Here the coefficients for scattered, vaporized, and  
diffusion ions are measured separately and their dependence on  
the energy of the primary ions (Na, K, Rb, Cs) as well as on the  
surface temperature of the filamentary W-target is determined.

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Investigation of the Components of the Secondary SOV/166-59-2-6/11  
Ionic Emission for High Temperatures of the Target  
and for an Appearing Thermal Electron Emission

The sum of the measured coefficients yields the total  
coefficient of the secondary ionic emission. The results of  
the measurements are represented graphically.  
There are 3 figures, and 3 Soviet references.

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear  
Physics AS Uz. SSR)

SUBMITTED: February 22, 1959

Card 2/2

15(4)

06375

AUTHORS:

Arifov, U.A., Kleyn, G.A., Pashinskiy, S.Z., SOV/166-59-5-2/9  
Lapidus, L.A., Anastasov, S.A., Zaurov, R.I.,  
and Kordub, N.V.

TITLE:

The Investigation of the Method of  $\gamma$ -Rays for the Pickling and  
Conservation of the Chrysalises of the Silkworm

PERIODICAL:

Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-  
matematicheskikh nauk, 1959, Nr 5, pp 12-17 (USSR)

ABSTRACT:

The paper is a continuation of [Ref 1,2,3]. For a great number  
(700 kg) of living chrysalises the authors investigate the  
effect of a  $\gamma$ -irradiation on the quality of the chrysalises  
and the raw silk obtained out of them. It is stated: 1. The  
chrysalises irradiated with  $\gamma$ -rays  $\text{Co}^{60}$  yield more raw silk  
than chrysalises submitted to hot air. 2. During the spooling  
the silk thread tears seldom, the mean length of the thread is  
larger. 3. Mildewing during the conservation is seldom, it  
appears by the humidity separated by the chrysalises. 4. A  
complete elimination of the mold is only possible if the moisture

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9(3)

AUTHORS:

SOV/20-124-1-16/69

Arifov, U. A., Academician, AS Uzbekskaya SSR, Ayukhanov, A. Kh.,  
Starodubtsev, S. V., Academician, AS Uzbekskaya SSR, Khadzhimukha-  
medov, Kh. Kh.

TITLE:

On a Method of Investigating the Secondary Processes Which Are  
Caused by Ions at High Temperatures of the Target in the Case of  
a Thermoelectronic Emission (O metodike issledovaniya vtorichnykh  
protssessov, vyzyvayemykh ionami pri vysokikh temperaturakh misheney  
v prisutstvi termoelektronnoy emissii)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 60-62 (USSR)

ABSTRACT:

It was interesting to perfect the method of double modulation used  
for the investigation of secondary ion processes at high tempera-  
tures (at which a flux of thermal electrons exists). The apparatus  
used was similar to one that has already been described (Ref 2),  
with the exception that an electrically heated filament was sub-  
stituted for the plane target. A schematical drawing shows the  
principles of the electric wiring diagram. Target temperature was  
determined from the heating current and from the diameter of the  
filament; the work function was determined by the method of  
Richardson straight lines, taking a correction for the Schottky  
effect into account. The primary and secondary ion fluxes and also

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SOV/20-124-1-16/69

On a Method of Investigating the Secondary Processes Which Are Caused by Ions at High Temperatures of the Target in the Case of a Thermoelectronic Emission

the current intensity of the thermal electrons were determined from the coordinates of oscillograms. In the case under investigation the application of the method of double modulation is reduced to the following: the primary ion beam accelerated by the field is modulated with respect to intensity by a generator for rectilinear pulses with a frequency of 500 - 1000 cycles (first modulation) and directioned on to the target. The flux of the secondary emission from the target is then collected by a collector and is transmitted to the input of the vertical amplifier of an oscillograph. The horizontal development of this oscillograph is synchronized with the generator of the saw-tooth pulses. Three oscillograms of a filament-like W-target (which was bombarded with 840 ev  $K^+$ -ions) are added at 1800° K. Secondary ion emission consists of 3 components. On the basis of the here discussed examples it is possible to define the coefficient of the secondary ion emission as the ratio of the sum of components of the secondary ion fluxes to the primary ion flux. The amount of this coefficient depends in a complicated manner on the energy, the ionization potential, the mass of ions, the temperature, the work function, and the mass of the ions contained in the target. It is thus possible, by the here discussed

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SOV/20-124-1-16/69  
On a Method of Investigating the Secondary Processes Which Are Caused by Ions  
at High Temperatures of the Target in the Case of a Thermoelectronic Emission

improved method of double modulation, separately to investigate the individual components of secondary emission, viz: the amperages of the scattered, evaporated, and diffused ions, as well as the thermoelectrons occurring in the bombardment of pure metal targets by positive ions (at high temperature in the presence of considerable thermoelectronic emission). There are 2 figures and 3 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk UzSSR  
(Physico-Technical Institute of the Academy of Sciences, Uzbekskaya SSR)

SUBMITTED: August 29, 1958

Card 3/3

ROZHDESTVENSKAYA, L.F.; ARIFOV, U.A., akademik; KLEYN, G.A.; ABLYAYEV,  
Sh.A.

Effect of gamma rays of  $\text{Co}^{60}$  on the feed properties of  
mulberry leaves. Dokl.AN Uz.SSR no.8:11-13 '59.  
(MIRA 12:11)

1.AN UzSSR (for Arifov). 2. Institut yadernoy fiziki AN UzSSR.  
(Mulberry)  
(Gamma rays--Physiological effect)

GREBINSKAYA, M.I.; ARIFOV, U.A., akademik; KLEYN, G.A.; ABLIKHONOV, Sh.A.

Effect of gamma rays from  $\text{Co}^{60}$  on mulberry seeds. Dokl. AN Uz.SSR  
no.10:17-19 '59 (MIRA 13:3)

1. Institut yadernoy fiziki AN UzSSR. 2. AN UzSSR (for Arifov).  
(Mulberry) (Gamma rays--Physiological effect)

ARIFOV, U. I.

~~IVASHEV, G. D.~~

PHASE I BOOK EXPLOITATION SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurazulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. N. Iskhakov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Medical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

Card 1/20

176

Transactions of the Tashkent (Cont.)

SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

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RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION  
IN ENGINEERING AND GEOLOGY

Lobanov, Ye. M. [Institut yadernoy fiziki UzSSR - Institute of Nuclear Physics AS UzSSR]. Application of Radioactive Isotopes and Nuclear Radiation in Uzbekistan

7

Taksar, I. M., and V. A. Yanushkovskiy [Institut fiziki AN Latv SSR - Institute of Physics AS Latvian SSR]. Problems of the Typification of Automatic-Control Apparatus Based on the Use of Radioactive Isotopes

9

Card 3/20

Transactions of the Tashkent (Cont.)

SOV/5410

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- Breger, A. Kh., V. B. Osipov, and V. A. Gol'din [Fiziko-khimicheskiy institut im. L. Ya. Karpova - Physicochemical Institute imeni L. Ya. Karpov]. Universal Plant With Source of Gamma-Radiation Co<sup>60</sup> With an Activity of 60,000 g-equiv. of Radium for Simulating Radiation-Chemical Apparatus and Conducting Investigations (K--60,000) 100
- Breger, A. Kh. [Physicochemical Institute imeni L. Ya. Karpov]. Scientific and Technical Principles in Developing Radiation-Chemical Apparatus 107
- Arifov, U. A., S. V. Starodubtsev, Ye. M. Lobanov, G. A. Kleyn, and S. Z. Pashinskiy [Institute of Nuclear Physics AS UzSSR]. Plants of the Academy of Sciences of the Uzbekskaya SSR for Various Gamma-Radiation Studies and Semi-Industrial Experiments 120
- Breger, A. Kh., B. I. Vaynshteyn, L. S. Guzoy, Yu. S. Ryabulchin, and N. P. Syrkus [Physicochemical Institute imeni L. Ya. Karpov]. Absorption of Gamma-Radiation in Macrosystems 123

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S/166/60/000/02/07/013

AUTHORS: Arifov, U.A., Member of the AS Uz SSR,  
and Tashkhanova, D.A.

TITLE: On the Energy Spectrum and the Composition of the Secondary Emission  
of Negative Particles From Na-Films to Ta During a Bombardment With  
Ar-Ions

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-  
matematicheskikh nauk, 1960, No.2, pp. 61-67

TEXT: With the aid of a complicated arrangement of experiments the secondary emission of electrons was investigated which appears during the bombardment by argon ions of an Na-film being on a tantalum base. The obtained volt-ampere-characteristics of the considered emission show a significant separation into particles with a soft and a hard energetic spectrum. The emission of particles with a soft spectrum is observed for all states of the bombarded surface. The emission with a hard spectrum is missing for a free Ta-surface and appears and increases with the density of the Na-film; hereby a certain maximal value is reached whereafter there follows a decrease up to a final value for a further increase of the density of the film. Herefrom it is concluded that the particles with a hard energy spectrum are negative ions of the absorbed gases (Ref.6). At the other hand it is

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On the Energy Spectrum and the Composition of the S/166/60/000/02/07/013  
Secondary Emission of Negative Particles From Na-  
Films to Ta During a Bombardment With Ar-Ions

stated that the emission with a soft spectrum in essential is at the expense of the potential energy of the bombarded ions. Herewith it is proved that the observed secondary emission consists of two separated phenomena.

There are 5 figures and 11 references: 9 Soviet, 1 German and 1 American.

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear  
Physics AS Uz SSR)

SUBMITTED: January 25, 1960

Card 2/2

S/166/60/000/02/11/013

AUTHORS: Arifov, U.A., Member of the AS Uz SSR, Kleyn, G.A., Filippov, A.N.,  
Slepakova, S.I., Zaurov, R.I. and Kordub, N.N.

TITLE: The Variation of Properties of Natural Silk in Different Media and  
the Synthetic Nitron Fiber in the Air by Gamma Radiation 19

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-  
matematicheskikh nauk, 1960, No.2, pp.89-95

TEXT: The authors communicate the results of the investigation of the  
variation of several mechanic, physical and chemical properties of the raw  
silk during a radiation with the gamma rays of  $Co^{60}$  in distilled water, benzol,  
hydrogen and air. For a comparison the variations of the synthetic acrylonitile  
nitron fiber are considered. It is stated that the synthetic fiber especially  
for a strong radiation has a greater power of resistance than the natural  
raw silk. There are 6 figures and 2 Soviet references. ✓

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear Physics  
AS Uz SSR) Uzbekskiy n.-i. institut shelkovoy promyshlennosti  
(Uzbekskiy Scientific Research Institute of Silk Industry)

SUBMITTED: February 16, 1959

Card 1/1

ARIFOV, U.A., akademik; KLEYN, G.A.; JKUN', G.S.; PASHINSKIY, S.Z.;  
OSIPOVA, L.Kh.; FAYERMAN, V.T.

Vacuum investigation of deformations of natural silk irradiated  
by gamma rays. Izv.AN Uz.SSR.Ser.fiz.-mat.nauk no.3:32-37  
'60. (MIRA 13:8)

1. Institut yadernoy fiziki AN UzSSR i Uzbekskiy nauchno-  
issledovatel'skiy institut shelkovoy promyshlennosti. 2. AN  
UzSSR (for Arifov).

(Gamma rays)

(Silk)

(Materials, Effect of radiation on)

S/166/60/000/004/004/008  
C111/C222

AUTHORS: Arifov, U.A., Academician of the Academy of Sciences Uzbek-  
kaya SSR, Kleyn, G.A., Filippov, A.N., Amirova, N.Yu.,  
Adilkhodzhayeva, G.A., Okun', G.S. and Osipova, L.Kh.

TITLE: The Radiation-Induced Graft Copolymerization of Natural Silk,  
Capron and Viscose

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR. Seriya fiziko-  
matematicheskikh nauk, 1960, No.4, pp.59-64.

TEXT: Continuing the authors' investigations (Ref.1-7) the processes mentioned in the title were investigated, whereby it was stated: By radiation it is possible to obtain graft polymeres of natural silk, of capron and of viscose for an immediate contact with the monomers and their solutions. The reaction of the graft copolymerization of the mentioned fibre materials with styren and methylmetacrylate is more extensive than their reaction with vinyl acetate. The synthesis of the graft copolymeres takes easily place in presence of methyl alcohol; often the reaction is accelerated by water; the role of the water seems to be complicated. If the graft of styren and methylmeta-

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S/166/60/000/004/004/008  
C111/C222

The Radiation-Induced Graft Copolymerization of Natural Silk, Capron and Viscose

crylate takes place under conditions where no strong  $\gamma$ -radiation<sup>19</sup> is necessary, then it improves the dynamometric properties of the modified fibres. The copolymerization of the fibre materials with styren and methylmetacrylate (graft 50-80%) takes place in the fibre. There are 15 references: 10 Soviet, 4 Polish and 1 Swiss. ✓

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear Physics of the Academy of Sciences Uzbekskaya SSR)

SUBMITTED: May 24, 1960

Card 2/2

*Arifov, U. A.*

82160  
S/048/60/024/06/05/017  
B019/B067

9.3/20

AUTHORS:

Arifov, U. A., Rakhimov, R. R.

TITLE:

Investigation of the Dependence of Ion-induced Electron  
Emission on Some Target Parameters and Incident Ions

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,  
1960, Vol. 24, No. 6, pp. 657-663

TEXT: This is the reproduction of a lecture delivered at the 9th All-Union Conference on Cathode Electronics from October 21 to 28, 1959 in Moscow. In the introduction the effects occurring in the bombardment of metal surfaces with positive ions are dealt with (electron emission due to ionic impact; field-induced electron emission caused by the internal energy of ions). Furthermore, recent publications are dealt with. V. G. Tel'kovskiy (Ref. 5) is mentioned among others. The experiments were made with the vacuum apparatus shown in Fig. 1; the design and the electrical circuit of this apparatus in which measurements are made by an oscilloscope are described in detail. The measurement error is given to be 2-3%. In discussing the experimental results, first the dependence of the coefficient of potential and kinetic electron emission on temperature, Card 1/4

Investigation of the Dependence of Ion-induced  
Electron Emission on Some Target Parameters and  
Incident Ions

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S/048/60/024/06/05/017  
B019/B067

and the work function from the metal are dealt with. A Mo target was used for these experiments which was bombarded with Ar- and K-ions with kinetic energies of 200 ev and 5,000 ev. The dependence of the two afore-mentioned coefficients graphically shown in Fig. 2 indicates that for pure Mo they are not temperature-dependent (Curves 1 and 2 in Fig. 2). If the Mo surface is contaminated (adsorbed molecules) a temperature dependence (Curve 3 in Fig. 2) can be observed. Furthermore, the study of the dependence of the two coefficients on the work function of electrons is dealt with, and Pt, Ni, W, Mo, Ta, Zr, and Mg targets are investigated. First the influence exercised by a thermal treatment of the metals is reported on, which in the case of some metals (Ta, Mo, W) is considerably high (Fig. 3). Fig. 4 graphically shows the dependence of the emission of secondary electrons on the work function for Ar- and Ne ions. It is shown that the coefficient of potential electron emission greatly depends on the work function. In the last chapter, the dependence of the two emission coefficients on the energy of incident electrons is dealt with. It is concluded from the results which are graphically represented in Figs. 5

Gard 2/4

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Investigation of the Dependence of Ion-induced  
Electron Emission on Some Target Parameters and  
Incident Ions

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B019/B067

to 8 that with sufficiently high energies of primary ions the kinetic energy of electrons is independent of the work function. In general, it is summarized that the coefficients of potential and kinetic electron emission do not depend on the metal temperature, that the coefficient of potential electron emission is reduced with increasing work function, that the linear increase in secondary electron emission with the energy of incident ions in rare gases and alkali metal ions can be explained by electron emission due to ionic impact caused by the kinetic energy of incident ions that the potential electron emission does practically not depend on the kinetic energy of ions up to 10 kev, and that with a kinetic energy of incident ions of more than 8 kev secondary electron emission for Mo, Ta, and W is approximately equal. There are 8 figures and 14 references: 9 Soviet, 2 British, 2 German, and 1 American.

Card 3/4

JK



Investigation of the Dependence of Ion-induced  
Electron Emission on Some Target Parameters and  
Incident Ions

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S/048/60/024/06/05/017  
B019/B067

ASSOCIATION: Institut yadernoy fiziki Akademii nauk UzSSR  
(Institute of Nuclear Physics of the Academy of Sciences,  
Uzbekskaya SSR)

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Card 4/4

Arifov, U. A.

9.3120

82161  
S/048/60/024/06/06/017  
B019/B067

AUTHORS: Arifov, U. A., Tashkhanova, D. A.

TITLE: Secondary Electron Emission in the Bombardment of Na-Films  
With Ar-Ions

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,  
1960, Vol. 24, No. 6, pp. 664-667

TEXT: This is the reproduction of a lecture delivered at the 9th All-Union Conference on Cathode Electronics from October 21 to 28, 1959 in Moscow. The results of preparative experiments are presented here. The experimental arrangement was the same as that used and described in Refs. 3, 8. Metallic sodium sputtered upon a tantalum base layer was used as target. The results show that the voltampere characteristics obtained in bombarding the Na-film with argon ions considerably differ from similar results obtained in the bombardment with alkali ions. Fig. 1 shows volt-ampere characteristics of secondary electron emission in the bombardment of a Na-film on a Ta-base layer with 900-ev Ar-ions. The authors mention the occurrence of two groups of secondary electrons, one with a soft-

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Secondary Electron Emission in the Bombardment  
of Na-Films With Ar-Ions

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B019/B067

energy spectrum, and one with a hard-energy spectrum. Fig. 2 shows a series of oscillograms of the voltampere characteristics obtained with 720-ev Ar-ions. Fig. 3 graphically shows the dependence of the secondary emission coefficients of the two groups on the thickness of the Na-film. For both groups a distinct maximum occurs, and it is concluded from the course of these two curves that in the group with hard-energy spectrum not only secondary electrons but also negative ions of adsorbed gases occur. Furthermore, the authors conclude that field-induced electron emission takes place in the bombardment with Ar-ions for all thicknesses of the Na-film on a Ta-base layer. This assumption was checked by separating the electrons from the negative ions by means of a magnetic field, and confirmed by the oscillograms shown in Fig. 4. There are 4 figures and 11 references: 9 Soviet, 1 American, and 1 German.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk UzSSR  
(Institute of Nuclear Physics of the Academy of Sciences,  
Uzbekskaya SSR)

Card 2/2

Arifov, U. A.

82169  
S/048/60/024/06/14/017  
B019/B067

24.6810

AUTHORS: Arifov, U. A., Khadzhimukhamedov, Kh. Kh.

TITLE: On the Problem of Neutralization of Fast Positive Ions 21  
on a Metal Surface

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,  
1960, Vol. 24, No. 6, pp. 705-709

TEXT: This is the reproduction of a lecture delivered at the 9th All-  
Union Conference on Cathode Electronics from October 21 to 28, 1959 in  
Moscow. The authors suggest a method of determining the neutralization  
coefficient of positive ions by the bombarded target. The investigations  
were made with  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Rb}^+$ , and  $\text{Cs}^+$  ions, and targets of W, Mo, and Ta,  
and the influence exercised by temperature and energy of the incident ions  
was studied. The primary and secondary ion currents were measured by a  
method described in a paper by Arifov (Ref. 6). By this method, oscillo-  
grams (Fig. 1) of the voltampere characteristics of the primary ion current,  
currents of scattered ions, evaporated ions, diffusion ions, and thermo-  
electronic ions were obtained. The determination of the individual compo-  
nents from the oscillogram is discussed, and the experimental device is  
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On the Problem of Neutralization of Fast  
Positive Ions on a Metal Surface

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S/048/60/024/06/14/017  
B019/B067

described. In the diagrams of Figs. 3 and 4, the dependences of the neutralization coefficients of the individual components are graphically represented. In the last chapter, the investigation of the dependence of the neutralization coefficient on the energy of incident ions is dealt with. In the diagram of Fig. 5, these dependences are graphically represented. The results presented show that the integral neutralization coefficient depends on the impinging particles in a complex manner. In this connection, the target temperature, the work function from the target, the energy, and the ionization potential of primary ions play an important part. There are 5 figures, 1 table, and 10 references: 8 Soviet, 1 British, and 1 American.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk UzSSR  
(Institute of Nuclear Physics of the Academy of Sciences,  
Uzbekskaya SSR)

Card 2/2

ARIFOV, U. A.

9.3120

82170  
S/048/60/024/06/15/017  
B019/B067

AUTHORS: Arifov, U. A., Ayukhanov, A. Kh., Gruich, D. D.  
TITLE: On the Problem of Scattering of Slow Alkali Ions From a Metal Surface 21  
PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 6, pp. 710-714

TEXT: This is the reproduction of a lecture delivered at the 9th All-Union Conference on Cathode Electronics from October 21 to 28, 1959 in Moscow. For the experiments described here the authors used the experimental arrangement described by Arifanov et al. (Refs. 4, 5, and 6) in previous papers with minor modifications. Figs. 1, 2 and 3 show the dependences of the scattering coefficient on the energy of  $\text{Na}^+$  and  $\text{K}^+$  ions in the bombardment of a pure tungsten surface, on the energy of  $\text{Cs}^+$  ions in the bombardment of a well purified Ni-surface and a less well purified Ni-surface, and the dependence of  $\eta$  on the energy of  $\text{Na}^+$  and  $\text{K}^+$  ions in the bombardment of a pure tungsten surface.  $\eta$  denotes the ratio of the limiting energy of scattered ions and the energies of primary ions.

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STARODUBTSEV, S.V., akad., otv. red.; ABDULLAYEV, A.A., kand. fiz.-mat. nauk, red.; ABDURASULOV, D.M., doktor med. nauk, red.; ARIFOV, U.A., akad., red.; BORODULINA, A.A., kand. biol. nauk, red.; IVASHEV, V.N., red.; IKRAMOVA, G.S., red.; KIV, A.Ye., red.; LOBANOV, Ye.M., kand. fiz.-mat. nauk, red.; NIKOLAYEV, A.I., kand. med. nauk, red.; NISHANOV, D., kand. khim. nauk, red.; SADYKOV, A.S., akad., red.; TALANIN, Yu.N., kand. fiz.-mat. nauk, red.; TURAKULOV, Ya.Kh., doktor biol. nauk, red.; GAYSINSKAYA, I.G., red.; GOR'KOVAYA, Z.P., tekhn. red.

[Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy] Trudy Tashkentskoy konferentsii po mirnomu ispol'zovaniyu atomnoi energii, 1959. Tashkent, Izd-vo Akad.nauk Uzbekskoi SSR. Vol.1. 1961. 410 p. (MIRA 15:5)

1. Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii, Tashkent, 1959. 2. Akademiya nauk Uzbekskoy SSSR (for Starodubtsev, Arifov, Sadykov). 3. Chlen-korrespondent Akademii nauk SSSR (for Sadykov). 4. Institut yadernoy fiziki Akademii nauk Uzbekskoy SSR (for Arifov, Lobanov). 5. Institut krayevoy eksperimental'noy meditsiny Akademii nauk Uzbekskoy SSR (for Turakulov). (Atomic energy--Congresses)

PHASE I BOOK EXPLOITATION

SOV/6045

Arifov, Ubay Arifovich

Vzaimodeystviye atomnykh chastits s poverkhnost'yu metalla (Interaction of Atomic Particles With Metal Surfaces) Tashkent, Izd-vo AN UzbSSR, 1961.  
323 p. 3000 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR. Institut yadernoy fiziki.

Resp. Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR;  
Eds.: Z. A. Mil'man and M. I. Pavlova; Tech. Ed.: A. T. Shepel'kov.

PURPOSE: This book is intended for scientific research workers specializing in physics and electronics, and for teachers, engineers, aspirants, and senior students at schools of higher technical education.

COVERAGE: Results of investigations conducted under the supervision of the author by the Academy of Sciences Uzbek SSR in the field of electronics during the last fifteen years are summarized. The most recent data on processes taking place

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AUTHOR: Arifov, U. A.  
TITLE: Prospects for the development of scientific research at the  
Institut yadernoy fiziki Akademii nauk Uzbekskoy SSR  
(Institute of Nuclear Physics of the Academy of Sciences  
Uzbekskaya SSR)  
SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu  
atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent,  
1961, 9-15

TEXT: A detailed report is given of the aims and activities of the  
Institute which was founded as the result of a resolution (July 1956) of  
the Sovet Ministrov SSSR (Council of Ministers of the USSR). Located in  
Tashkent, it is regarded as the scientific center for atomic and isotope  
research in Uzbekistan. It carries out research work in all fields of  
the peaceful application of atomic energy and of modern nuclear research.  
It will also have an advisory function in the use of radioisotopes in  
industry and agriculture and has the commitment of training highly

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Prospects for the development ...

qualified specialists. For this purpose the fizicheskiy fakul'tet v Tashkentском gosudarstvennom universitet (Physics Department of Tashkent State University) was also established and an inzhenerno-fizicheskoye otdeleniye (Department of Physical Engineering) will be founded which will be subordinate to the energeticheskiy fakul'tet Sredneaziatskogo politekhnicheskogo instituta (Department of Power Engineering of the [Soviet] Central Asian Polytechnic Institute). The staff of the Institute consists mainly of young specialists trained in Moscow, Leningrad, Kiyev and at the Physics Departments of Tashkent and Samarkandskiy gosudarstvennyy universitet (Samarkand State University). The Institute is equipped with a cyclotron, a fast-neutron generator, a 100,000-curie or 160 kg-equ. cobalt gun, radium and special equipment for basic nuclear physical and radiochemical research. On September 10, 1959 a 2000-kw reactor, the first in the Soviet East, was started up. At the 21st Congress of the KPSS a number of resolutions were adopted concerning the tasks of the Institute. Special attention is to be paid to the study of nuclear reactions between 0 and 20 Mev, nuclear spectroscopy and neutron physics. The research program further envisages studies of radiation processes in gas discharges, radiation synthesis and other

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Prospects for the development ...

problems of the chemical industry, studies of interaction- and secondary processes, activation analysis (especially in the field of non-ferrous metals where Uzbekistan plays the leading part) and the ordinary work in the field of theoretical nuclear physics. As the Institute was only opened three years ago not much work has as yet been completed. The author draws attention to the studies of the effect of  $\gamma$ -radiation on cocoons and natural silk have been made in the Laboratoriya radiatsionnykh effektov (Laboratory of Radiation Effects) in collaboration with the N.-i. institut shelkovoy promyshlennosti (Scientific Research Institute of the Silk Industry) and the Fiziko-tekhnicheskiy institut AN UzSSR (Physicotechnical Institute AS Uzbekskaya SSR). Relay systems were supplied to the rubber shop of the "Tashkentskabel'" cable works, which, used in automatic vulcanization, will save 330,000 rubles per year. A radioactive control unit was developed for the Chirchikskiy elektrokhimicheskiy kombinat (Chirchik Electrochemical Combine). The "Sovmovskiy-7" uses a  $\gamma$ -consistometer developed by the Institute is used for measurements in the spoil pipelines of dredgers in the Kyz-Ketken Canal of the Kara-Kalpakskaya ASSR. Five more of these instruments have been ordered by the Ministerstvo vodnogo khozyaystva UzSSR (Ministry of wa- /

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ter supply and conservation of the Uzbekskaya SSR). Since in Uzbekistan there are more than 300 and in the Turkmeneskaya SSR about 200 such, the instrument is of great importance.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics AS Uzbekskaya SSR)

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